

**The Impact of Mass Media Campaigns
on Intentions to Use the Female Condom
in Tanzania**

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Abstract

Objective: To determine whether a mass media campaign to promote the use of the female condom had an impact on intentions to use the female condom among men and women of reproductive age in Tanzania.

Methods: We used data on 2712 sexually experienced men and women in Tanzania from an exit survey conducted at outlets that sell the female condom. Respondents were asked about their exposure to mass media campaigns, peer education, and a medical provider's explanation of the female condom. They were also asked about their intention to use female condoms in the future. Path analysis was used to determine the impact of mass media, peer education, and a provider's explanation on intentions to use the female condom.

Results: A relatively small proportion of respondents were reached by a peer educator or by a provider: about 6% were exposed to peer education and 6% were given an explanation by a provider on use of the female condom. In contrast, about 38% of respondents were exposed to mass media campaigns promoting the female condom. For both men and women, mass media significantly increased the likelihood that a man or a woman would discuss use of the female condom with a partner. In turn, discussion of the female condom with a partner strongly influenced the intention to use the female condom in the future. Although the reach of peer educators and providers was relatively low, the impact of these components of the intervention on an individual's intentions to use the female condom was stronger than the impact of mass media.

Conclusions: Mass media campaigns are likely to increase an individual's motivation to use condoms because they encourage the discussion of condom use with a partner. While mass media campaigns do not have as strong an impact on a particular individual's motivation to use condoms as do peer educators or providers, mass media campaigns have a substantial impact at the population level because of their considerably greater reach.

INTRODUCTION

In order to change sexual behavior for AIDS prevention, social marketing programs balance the use of mass media with the use of interpersonal communications. Experimental studies have shown that interpersonal communication approaches, such as peer education and provider promotion of contraceptive methods, can have a significant impact on contraceptive use. However, evidence of the magnitude and quality of impact that mass media campaigns have on promoting change in behavior is less readily available. In part, this is because of the difficulty of designing experimental studies to measure the impact of mass media campaigns (Sherry, 1997; Kim et al., 2001).

In the absence of experimental studies, it is still possible to estimate the impact of mass media campaigns on condom use by using path analysis. Path analysis is a regression-based approach that uses cross sectional data but permits the ordering of a set of variables in a manner consistent with causal interpretation (Duncan, 1966). In this study, we use path analysis to assess whether a mass media campaign to promote use of the female condom had an impact on intentions to use the female condom among men and women of reproductive age in Tanzania. Previous research has shown that the intention to use a contraceptive method is a powerful predictor of future use of a method (Curtis et al., 1993).

BACKGROUND

Based on experience in developed countries, a substantial body of communications literature has shown that exposure to mass media campaigns is not necessary and sufficient to produce changes in behavior. In fact, usually, mass media messages reinforce attitudes and produce small changes in beliefs: it is less common for mass media to convert a person from one opinion to another. The effect of mass media on behavior is indirect and operates through various factors.

For example, how people communicate with each other about the mass media messages that they are exposed to may determine their response (Klapper, 1969).

In developing countries, many analyses of cross sectional surveys have shown strong associations between exposure to mass media and contraceptive use (Westoff and Rodríguez, 1995; Kincaid et al., 1996, Kim and Marangwanda, 1997; Kane et al., 1998; Jato et al., 1999). Because self-selection may explain the association between exposure to mass communication messages and contraceptive use (i.e. those who are already convinced about the usefulness of contraception may be more likely to remember contraceptive use messages), cross-sectional associations cannot be interpreted as evidence of an impact of mass media campaigns (Sherry, 1997). Instead, the identification of plausible mechanisms through which mass media has its impact is likely to be important in developing an understanding of how and to what extent does mass media impact on behavior or its antecedents.

Diffusion theorists postulate that mass media affects contraceptive use by stimulating the discussion of contraceptive use between partners (Rogers et al., 1999). Studies show that informal personal appeals have a very strong effect (Klapper, 1969). Through sharing information and mutual feedback, people give meaning to information, understand each other's views, and influence each other (Bandura, 1986). Thus, the discussion of contraceptive use between partners leads to the development of better understanding of reproductive health goals. Indeed perceived partner disapproval is an important deterrent to contraceptive adoption (Ezeh, 1993). When individuals' goals coincide or when agreement can be negotiated concerning the need for contraceptive use, couples are likely to implement contraceptive use. Several studies have shown that discussion of contraceptive use with a partner is highly predictive of future contraceptive adoption (Jato et al., 1999; Rogers et al., 1999). A recent studies shows that mass media campaigns can stimulate discussions of reproductive health issues (Kim et al., 2001), while another shows that the indirect effects of interventions on behavioral antecedents have a powerful impact on contraceptive behavior (Kincaid, 2000).

In this study, we assess whether mass media (radio and newspaper) promotion of the female condom motivated Tanzanian men and women to use the female condom. We evaluate whether mass media stimulates the discussion of female condom use and, in turn, discussion influences the intention to use the female condom. Aside from the mass media, the female condom intervention had two additional components: peer education and explanation by medical providers on how to use the female condom. Research shows that interventions that use mass media and interpersonal communication are particularly likely to have an impact on behavior (Agha, 2000; Ashford et al., 2000). Interpersonal influence is thought to have a greater impact than mass communication, although it is not a necessary factor in producing change (Klapper, 1969). We assess the impact of these two interpersonal communication components on the intention to use the female condom.

THE FEMALE CONDOM INTERVENTION

Population Services International (PSI) introduced the female condom in Dar es Salaam towards the end of 1998. The Government of the Netherlands donated the female condoms to PSI. Resources for marketing the product were provided jointly by USAID and the Government of the Netherlands. PSI had experience in marketing the female condom through its programs in Zimbabwe and Zambia (Meekers, 1999; Agha, 2001a; Agha, 2001b) and lessons learnt in these two countries were used to develop the female condom marketing strategy for Tanzania. In addition, an acceptability study was implemented among 125 professional men and women in Dar es Salaam (Forrest, 1997; PSI Tanzania Quarterly Report, January to March 1998). Most participants in the acceptability study showed interest in using the female condom.

One of the fundamental issues related to the adoption of condoms in sub-Saharan Africa is the difficulty that women have in negotiating the use of condoms (Schoepf, 1988; Ulin, 1992; Mwale and Burnard, 1992). Because condoms carry the

stigma of sexually transmitted infections (STIs), proposing condom use raises the issue that one does not trust one's partner or that one is infected. To prevent stigmatization of the female condom, PSI marketed the female condom as a contraceptive method that had the added benefit of STI protection. Research in Kenya has shown that male partners are more accepting of the female condom when it is introduced as a family planning method, even though women may actually use it for disease prevention (cited in Jones, 1999).

Messages that had been developed for the female condom intervention in Zimbabwe were pre-tested through focus groups with target audiences in Tanzania to ensure they were suitable for the Tanzanian social context. Consistent with messages in Zimbabwe and Zambia, the emphasis in the advertising and promotion was to provide women the language and tools to discuss and negotiate use of the female condom. Because the intervention was intended to promote the discussion of the female condom among partners, communications messages were targeted towards both men and women. The product was marketed as a method for couples who wanted to protect themselves against pregnancy and HIV. It was branded as "*care*", with the caption "For couples who *care*."

Mass media campaigns to promote the female condom were implemented during 1999. Radio campaigns promoting use of the female condom were implemented in April/May and in October/November 1999 (PSI Tanzania Quarterly Report, January-March 1999; PSI Tanzania Quarterly Report, July-September 1999). Newspapers were another important source of information about the female condom.

Focus groups were conducted to assess the effectiveness of the marketing strategy after approximately 8 months of the launch of *care*. These focus groups indicated that the strategy of emphasizing family planning and AIDS prevention messages had been effective: study participants associated use of the female

condom with marital relationships but reported that the most important reason for their own use of the female condom was HIV prevention (Jones, 1999).

Interpersonal communication components were an integral part of the female condom intervention. Previous experience in sub-Saharan Africa had shown that peer counseling improves women's ability to negotiate the use of the female condom (Kabira et al., 1997) and communications between couples increased the acceptability of the female condom (Jones, 1999). Potential users were given a detailed explanation of the female anatomy by community-based peer educators and health care workers, such as nurses, doctors, and pharmacists, who were trained to counsel potential users.

Pharmacies were a logical primary distribution point for the female condom because the project intended to reach middle and upper income professional men and women. It was also sold through NGOs and community based agents and was priced at US\$0.44 for a pack of two condoms. In contrast, PSI was marketing the *Salama* male condom to low-income individuals (3 *Salama* condoms could be purchased for US\$0.06) (Agha and Meekers, 2000).

DATA AND METHODS

OBJECTIVES OF THE SURVEY

The objectives of the 1999 Tanzania Female Condom Consumer Profile Survey (TFCCPS-99) were to determine a) the level of exposure that men and women of reproductive age had to the female condom mass-marketing intervention and b) the level of female condom use and c) the intention to use the female condom in the future.

WHAT IS A CONSUMER PROFILE SURVEY?

The TFCCPS-99 is an outlet-based exit survey in which respondents visiting pharmacies and NGOs are interviewed. Because people who visit commercial outlets are more likely to be wealthier than the general population, exit surveys tend to capture a higher socio-economic status population (Meekers and Ogada, 2001). Exit surveys can be a useful tool to measure the knowledge and use of products when they are first introduced because diffusion of new technologies usually starts with higher socio-economic status (SES) individuals.

Based on sales of the female condom, we estimated that the level of use of the female condom in the general population of reproductive age in Tanzania was below 1%. Therefore, instead of conducting a large and expensive household survey, we decided to conduct an exit survey. The methodology used in Tanzania was adapted from a similar survey conducted in Zambia (Agha, 2001b)

SAMPLING

The survey was restricted to outlets where the female condom was being sold: pharmacies and NGOs in Dar es Salaam. A multi-stage random sampling method was used to draw a representative sample of outlets. The first stage involved creating the master-sampling list of outlets that sold the *care* female condom and drawing a random sample that included 50% of all female condom outlets. The second stage involved randomly selecting eligible clients, men and women aged 15-49, at each selected outlet.

Out of the 67 outlets in the master list (58 pharmacies, and 9 NGOs), stratified random sampling was used to select 33 outlets (29 pharmacies and 4 NGOs). The probability that a pharmacy was selected was 0.5; for an NGO it was 0.44.

At each of the 33 outlets selected, women and men 15-49 who exited from the outlets were randomly selected for interviews. The number of clients entering the outlet during a particular day and the number of refusals were recorded for weighting purposes.

QUESTIONNAIRE DEVELOPMENT

Based on questionnaires used in Zimbabwe and Zambia (Meekers, 1999; Agha, 2001a), a quantitative questionnaire was developed for the TFCCPS-99. This questionnaire was adapted to the Tanzanian context. It was designed to gather information on socio-demographic characteristics of respondents, as well as information on knowledge, discussion, ever use, and intention to use the female condom. This questionnaire was translated into Kiswahili and pre-tested prior to survey implementation.

DATA COLLECTION, ENTRY AND CLEANING

Twenty-six interviewers (13 female, 13 male) were recruited and participated in a five day training during December 1999. The training included an explanation of the survey objectives and methodology. Although the interviewers were experienced, refresher training was given on interviewing techniques. The questionnaire was discussed in detail and interviewers became familiar with it by conducting role-plays. The final day of training was used to administer practice interviews in the field. One interviewer dropped out on the first day of data collection because she fell ill and the remaining 25 interviewers (12 female, 13 male) collected the data. The data was collected the last week of December 1999 through January 2000. During data entry and cleaning, sixteen records were eliminated because of missing data, leaving 3,013 respondents.

Interviewers were deployed at outlets in pairs. This was done to collect information on client flows: one interviewer would interview a client while the other

would count reproductive age men and women who entered the outlet. There were two shifts per day at each outlet. The first pair of interviewers (one female, one male) arrived at a provider outlet at 8:30 am and stayed till 1:00 p.m. The second pair arrived at the outlet at 1:00 p.m. and stayed there till 6:00 p.m. Because of the different working hours of NGOs, only one shift was conducted at NGO outlets (from 8:30 am to 2:30 p.m).

WEIGHTS

The data were weighted to take into account the different probabilities of selection of outlet types, of individuals at each outlet and the refusal rate at each outlet. The probability of selection of individuals at each outlet and the refusal rate was obtained from client flow information. During the 13 days of fieldwork at 29 pharmacies and four NGO clinics, 11,175 adult men and women (15 years or older) visited these outlets. The frequencies reported here are based on weighted numbers but the number of cases shown is based on the unweighted numbers.

THE PATH MODEL AND VARIABLES

We use a simple model to assess the impact of mass media promotion on intentions to use the female condom in the future. Path analysis permits the assessment of both direct and indirect effects of exogenous variables on dependent variables. This is particularly useful in the case of assessing the impact of mass media on motivation because a) developed country literature indicates that mass media has an indirect effect on motivation and b) diffusion theory postulates that the impact of mass media on motivation operates through encouraging discussion between partners.

Exogenous variables include age (in completed years), number of years of formal schooling (in completed years) and partnership status (single vs. other). Components of the social marketing intervention including peer education, a

medical provider's explanation of how to use the female condom, and exposure to radio or newspaper campaigns were treated as exogenous variables. Two jointly dependent (or endogenous) variables were included in the model: 1) discussion of the female condom with a partner and 2) the intention to use the female condom in the future.

This model is shown in Figure 1. Socio-demographic characteristics of respondents (age, marital status and education) serve as controls in the path model. We are primarily interested in the impact of peer educators, provider promotion and the mass media campaign on intentions to use the female condom. In particular, we are interested in exploring whether the effect of mass media is through promoting discussion of the female condom between partners or through another, unidentified, mechanism. We also want to assess the impact of peer education and provider promotion on the intention to use the female condom.

FIGURE 1 ABOUT HERE

STATISTICAL ANALYSIS

To analyze the model depicted in Figure 1 we relied on structural equation modeling techniques. For the actual analysis the LISREL package was used (Jöreskog and Sörbom, 1996b). A two-group analysis was run using separate covariance matrices for men and women, which allowed us to test for differences in the causal pathways for men and women. The final models shown in Figures 2 and 3 were achieved in a three step process. In the first step a baseline model was estimated. In this model we assumed: 1) the presence of the structural model shown in Figure 1 in which all exogenous variables (age, marital status, education, peer education, provider explanation, and mass media messages) affect all endogenous variables (discussion of FC with partner, and intention to use FC), and discussion of FC with partner also has an effect on the intention to use FC; and 2) that the causal models

for men and women are identical. The latter assumption was achieved by implementing equality constraints on B and G matrices, i.e., by forcing the unstandardized regression coefficients in the male and female subsamples to be equal. The fit for the baseline model was marginally acceptable with a χ^2 of 45.9 with 13 df ($p = 0.000$) and a root mean square error of approximation (RMSEA) of 0.043.

In the second step, modification indices (MI) were used to decide which equality constraints should be lifted. As the MI follow a χ^2 -distribution with 1 df (Jöreskog and Sörbom, 1993, 1996 and 1996b) , a MI of 3.814 or greater, corresponding to a α of 5%, was considered indicative of an ill-fitting equality constraint. This model had a χ^2 of 6.93 with 9 df ($p = 0.644$) and an RMSEA of 0.0. This indicates a very good fit of the model and a significant improvement over the baseline model ($\chi^2(4) = 39.0$, $p = 0.000$). In the third and final step the model was made more efficient by fixing non-significant regression coefficients to zero. The fit of this final model was a χ^2 of 17.9 with 15 df ($p = 0.267$) and an RMSEA of 0.012. The fit of this final model was not significantly worse than that of the step 2 model ($\chi^2(6) = 11.0$, $p = 0.089$). This final model is presented in Figures 2 and 3. All coefficients shown in these figures are significant at $\alpha = 5\%$. The correlations among the exogenous variables and residual effects are not shown in the figures. Coefficients estimated under an equality constraint are marked with “a”.

SAMPLE DESCRIPTION

About 10% of respondents (301 respondents out of 3,013) were not sexually experienced. Since sexually experienced persons were targeted for the female condom intervention, these 301 sexually inexperienced persons are not included in any of the subsequent analysis. All subsequent analysis is based on 2712 respondents (1186 women and 1526 men). The mean age of respondents was 29

years and the mean number of years of formal schooling completed was 13.4 years. About 42% of respondents were single (not shown).

Peer educators discussed the use of the female condom with about 6% of respondents (8% of women and 5% of men, $p < 0.01$) and medical providers also reached about 6% of respondents (9% of women and 5% of men, $p < 0.01$). Radio and newspaper promotion reached a much larger percentage of respondents. About 38% of respondents (41% of men and 34% of women, $p < 0.01$) reported having received information about the female condom through radio or newspapers (not shown).

Approximately, 8% of respondents had discussed use of female condom with a partner, 11% intended to use the female condom in the future and 3% had ever used the female condom (no difference by gender, not shown).

RESULTS

The models estimated and shown in Figures 2 and 3 predict a respondent's likelihood of discussing the female condom with their partner and the respondent's intention to use the female condom. The explained variance in the discussion of the female condom with one's partner is around 10% for both men and women. With regard to the explained variance in the intention to use the female condom, the model explains almost twice as much of the variance for the male sample ($R^2 = 0.220$) as for the female sample ($R^2 = 0.117$).

IMPACT OF THE PROGRAM ON A WOMAN'S INTENTIONS

Figure 2 is the final model showing the pathways through which programmatic and socio-demographic variables influence a woman's intention to use the female condom. All paths shown in the model are statistically significant at $p < 0.05$.

After controlling for all variables in the model, mass media does not directly impact a woman's intention to use the female condom, as is indicated by the absence of an arrow from the "mass media" variable to the "intention to use FC" variable in Figure 2. Mass media does have a statistically significant impact on intentions (total effect (TE) = 0.009, $p < .010$, standardized total effect (STE) = 0.014), but its effect operates through increasing discussion of the female condom between a woman and her partner. In turn, discussion of the female condom is a powerful predictor of a woman's intention to use the female condom. These findings are consistent with communications research which shows that mass media has an indirect impact on behavior.

Peer education has a relatively strong direct influence on a woman's intention to use the female condom, but does not affect her discussing the female condom with her partner. In contrast, the provider's explanation has a small direct effect on the intention to use the female condom and a substantial indirect effect (IE) (0.070 or 58% of TE, $p < 0.001$, standardized IE (SIE) = 0.067) by encouraging partner discussion of the female condom. The impact of peer education and provider's explanation on intentions to use the female condom confirm the importance of interventions that use interpersonal communication to promote use of the female condom.

IMPACT OF SOCIO-DEMOGRAPHIC VARIABLES ON A WOMAN'S INTENTIONS

Our analysis did not show any effect of age on a woman's intention to use the female condom. We expected a negative effect of age on intention to use the female condom because older women tend to be more interested in preventing pregnancy rather than STDs and because other reliable methods are available for family planning. It may also be that other demographic variables, such as marital status and education, explain the relationship between age and the intention to use the female condom. Consistent with this argument, single women are more likely to intend to use the female condom. A woman's level of education did not have a direct effect

on her intention to use the female condom, but it did have a weak indirect effect on it by increasing the likelihood of discussing the female condom with a partner (TE = 0.002, $p < 0.001$, STE = 0.029). Overall, these findings are consistent with previous analyses of intentions to use the female condom (Agha, 2001a).

FIGURE 2 ABOUT HERE

IMPACT OF THE PROGRAM ON A MAN'S INTENTIONS

Figure 3 shows the pathways through which socio-demographic and programmatic variables influence a man's intention to use the female condom. As before, all paths shown in the model are statistically significant at $p < 0.05$.

A first observation here is that the effect of discussing the female condom with one's partner on one's intention to use the female condom among men is significantly greater than among women (0.444 vs. 0.288, respectively). Thus, the indirect effects of program and socio-demographic variables on one's intention to use the female condom are larger among men than among women.

As with women, after controlling for other variables, there is no direct influence of mass media on a man's intention to use the female condom. However, a man exposed to mass media messages about the female condom is significantly more likely to discuss use of the female condom with a partner - and discussion with a partner is predictive of a man's intention to use the female condom. These findings are consistent with findings regarding the impact of mass media on a woman's intentions. No significant gender differences were observed in the effect of mass media exposure on the respondent's discussion of the female condom with a partner. Although the total effect of mass media exposure on intention to use the female condom among men (TE = 0.014, $p < 0.010$, STE = 0.022) is somewhat larger than among women, the difference is not significant.

Consistent with the findings for women, peer education has a powerful direct influence on male intentions to use the female condom. Among men the direct effect is even larger than among women. Peer education also encourages a man to discuss use of the female condom with his partner. The total effect of peer education on his intention to use the female condom was 0.362 ($p < 0.001$, $STE = 0.249$), of which 22% was indirect ($IE = 0.079$, $p < 0.001$, $SIE = 0.055$). No gender differences were observed in the effect of a provider's explanation on either one's discussion of the female condom with one's partner or one's intention to use it.

IMPACT OF SOCIO-DEMOGRAPHIC VARIABLES ON A MAN'S INTENTIONS

In contrast to women, older men are more likely to intend to use the female condom. The effect of marital status on one's intention to use the female condom was the same for men and women. Single men also had a higher intention to use the female condom than married men. As was the case among women, marital status did not affect a man's likelihood of discussing the female condom with his partner. Finally, a man's education increases the likelihood of his discussion of the female condom with a partner, while there is no direct relationship between his education and motivation to use the female condom. Again no gender differences were observed in the effects of education.

FIGURE 3 ABOUT HERE

DISCUSSION

The primary objective of this study was to assess the impact of mass media on male and female intentions to use the female condom, after an intervention which included mass media promotion of the female condom, peer education about the female condom and provider's explanation of how to use the female condom was

implemented in Dar es Salaam. A secondary objective was to evaluate the impact of peer education and provider's explanation on intentions to use the female condom. We used a path analytic approach that allowed us to assess the impact of the different components on the female condom program on male and female intentions to use the female condom.

Mass media had a significant positive impact on intentions to use the female condom - even after controlling for socio-demographic variables. Our findings are consistent with the interpretation that mass media promotion of the female condom motivated sexual partners to discuss use of the female condom, and that discussion of condom use exerted a strong influence on their intention to use the female condom. This pattern was observed for both men and women. Because lack of discussion of condoms between partners can be a significant barrier to condom use, mass media promotion of condoms is likely to have a positive impact on safer sex behavior.

Mass media was, however, only one of the program variables that had an impact on discussion of the female condom with a partner. Among women, a provider's explanation had a powerful impact on the likelihood of discussing the female condom with a partner. Among men, both peer education and a provider's explanation encouraged discussion of the female condom with a partner. These findings show that interpersonal interventions that encourage men and women to use condoms are, in part, successful because they increase discussion of condom use between partners.

The findings also show that an intervention that promotes the discussion of the female condom with a partner may be particularly successful in motivating men to use condoms (since the effect of discussion on intentions was significantly greater among men). For these reasons, peer education had a particularly strong impact on male intentions to use condoms.

Unlike mass media promotion, which had an indirect effect on the intention to use the female condom, peer education had a powerful direct impact on male and female intentions to use the female condom. These findings are consistent with previous research showing that peer education interventions are important in motivating individuals to adopt safer sex behaviors.

The impacts of the peer education and the provider component of the female condom program on intentions to use the method were larger than the impact of the mass media component. However, a relatively small proportion of respondents were reached by either a peer educator or by a provider: 6% of respondents were exposed to peer education and 6% were given an explanation about female condom use by a provider. In contrast, about 38% of respondents were reached by the mass media campaigns. Thus, mass media may have a less powerful impact on an individual's motivation to use a method than either peer education or provider explanation, but it is likely to have a substantial impact at the population level because of its considerably greater reach.

Studies have shown that the combination of interpersonal interventions and mass media campaigns are likely to have a measurable impact on reproductive behavior (Agha, 2000; Ashford, 2000). The findings of this study are consistent with previous research and show that interpersonal and mass media interventions have independent effects on intentions to use condoms.

One limitation of the present study is that its findings can only be generalized to higher socioeconomic status individuals who visit retail outlets such as pharmacies. Additional analyses, using data that is representative of the general population (i.e. from household surveys), should be conducted to confirm the findings of this study.

These findings also suggest that it would be useful to compare the cost-effectiveness of different components of a social marketing program using path analysis. Such analyses could help determine the optimal allocation of

communication resources between the interpersonal and mass media components of an intervention. Finally, the results of this study support the strategy of including mass media promotion, peer education, and provider explanation of condom use in programs designed to promote use of the female condom.

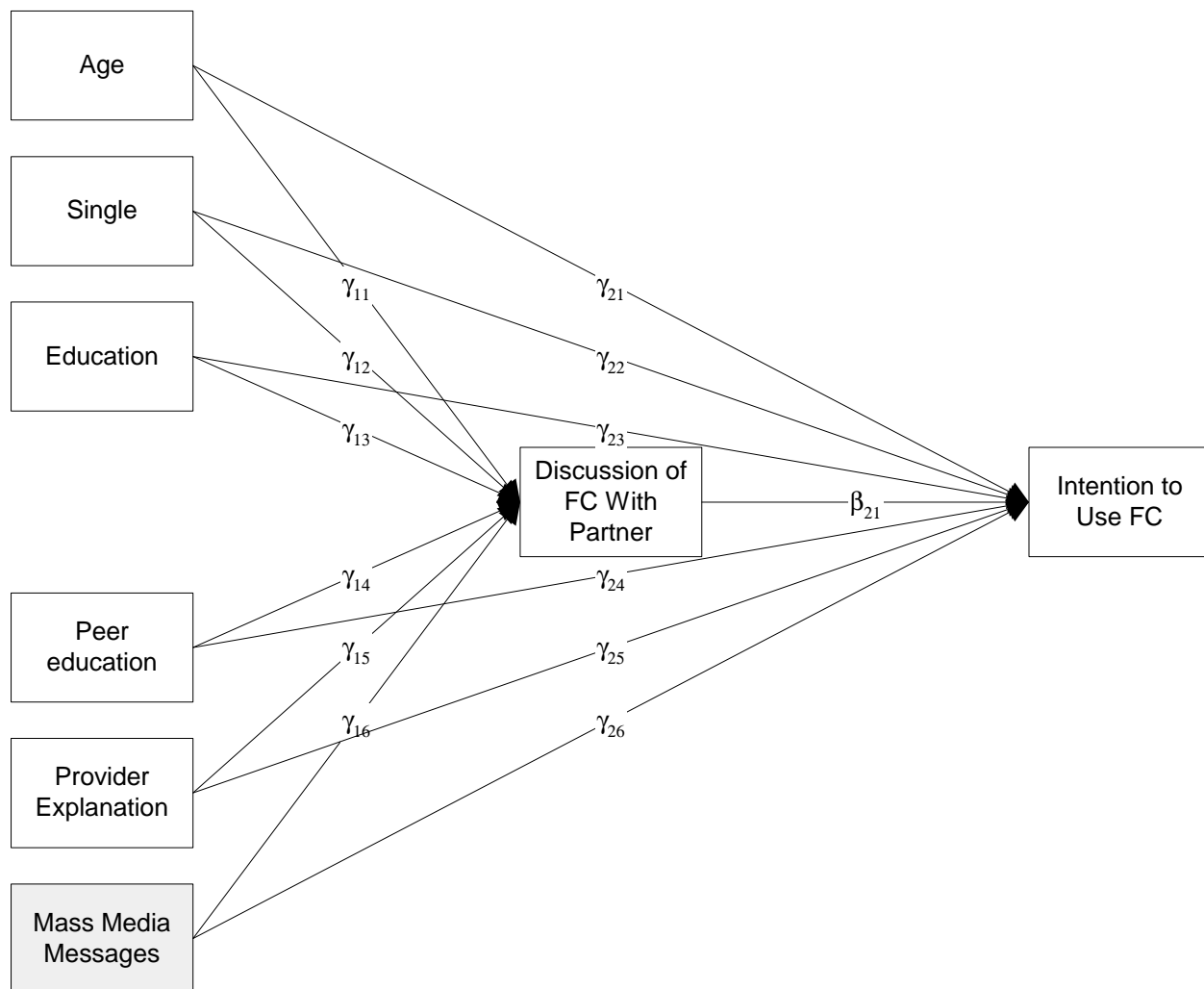
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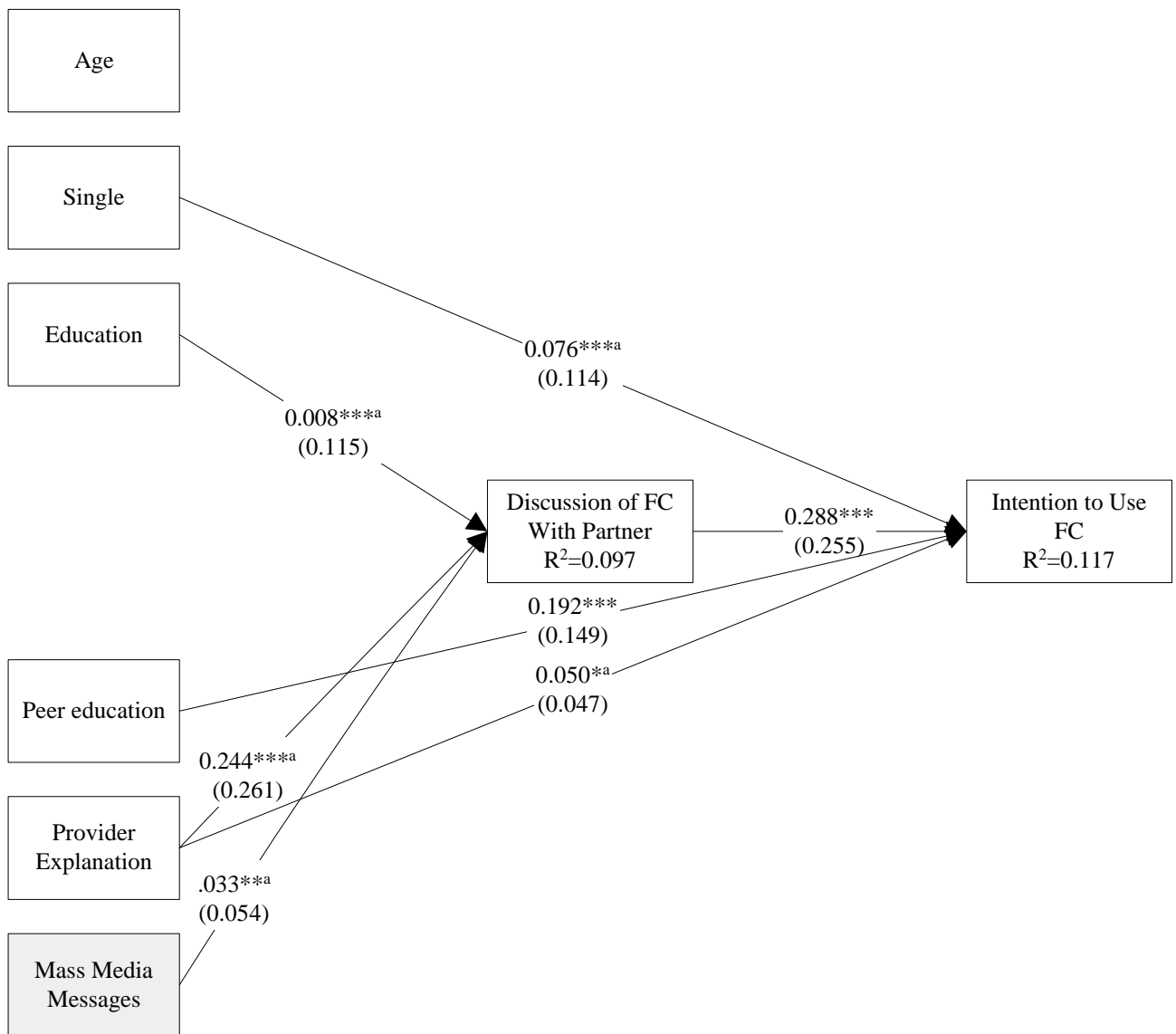
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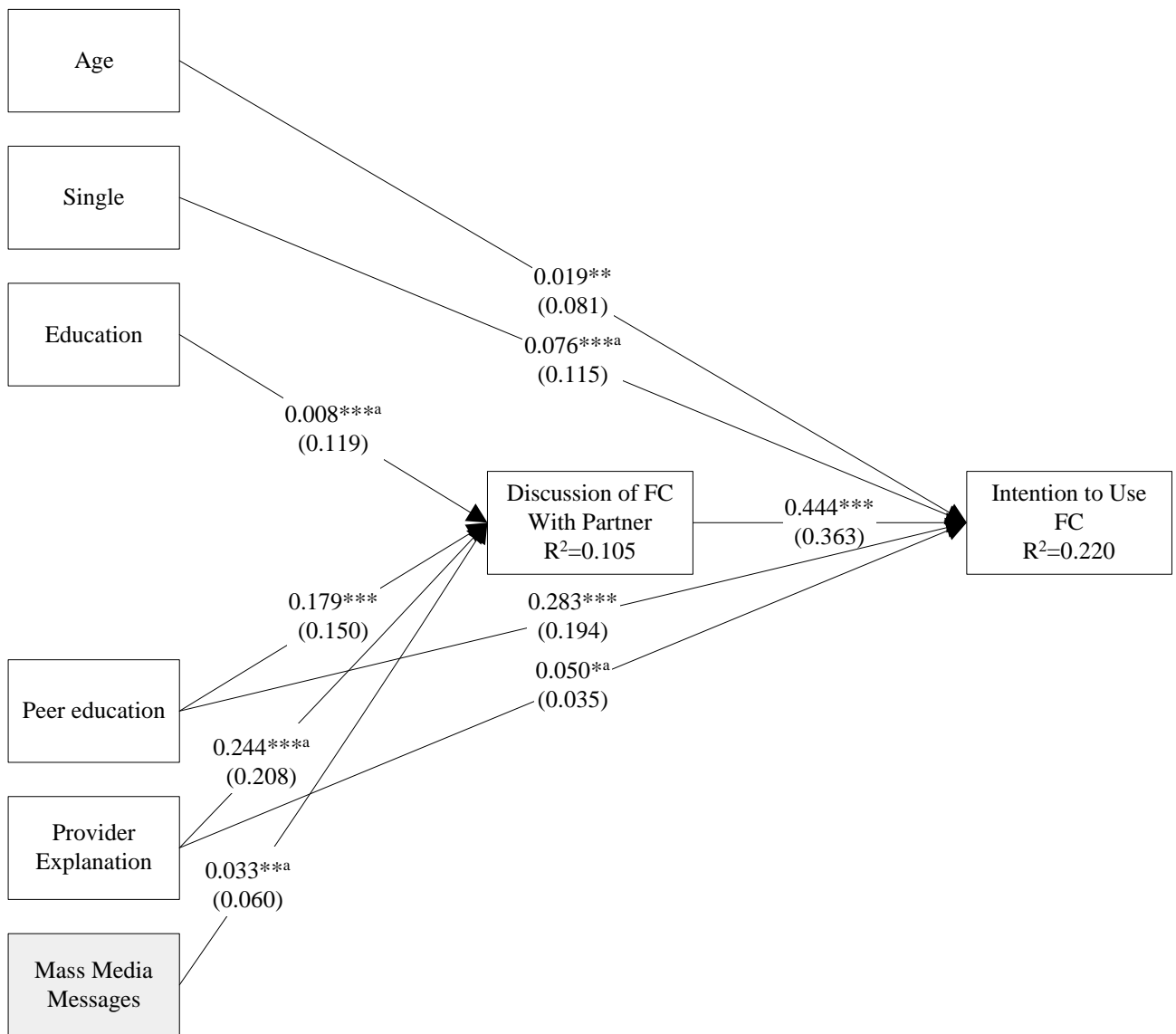
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^a: equality constraint imposed



$\chi^2(15) = 17.9, p = 0.267$
 RMSEA = 0.012
 NNFI=0.995